

REMARKS

Claim Status

Claims 1-5, 7, 8 and 10-15 are currently pending, with claims 1, 13, 14 and 15 being in independent form. Dependent claims 6 and 9 have been canceled. Claims 1-5, 7, 8 and 10-15 have been amended. Independent claims 1, 13, 14 and 15 have been amended to incorporate the subject matter of canceled dependent claims 6 and 9. The amendments to claims 2-5, 7, 8, 11 and 12 correct minor wording of the claims, and are cosmetic in nature. No new matter has been added. Reconsideration of the application, as herein amended, is respectfully requested.

Overview of the Office Action

Claims 1-12 stand rejected under 35 U.S.C. §112, second paragraph, as indefinite for failure to particularly point out and claim the subject matter which applicants regard as the invention. Withdrawal of this rejection is in order, as explained below.

Claims 1 and 10-15 stand rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,724,890 (“*Bareis*”). Claims 2-9 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Pub. No. 2005/0232300 (“*Stiscia*”).

Applicants have carefully considered the Examiner’s rejections, and the comments provided in support thereof. For the following reasons, applicants respectfully assert that all claims now pending in the present application are patentable over the cited art.

Descriptive Summary of the Prior Art

Bareis discloses an adaptive transmission line impedance matching device and method for xDSL and home phone-line network applications (see col. 2, lines 41-45).

Stiscia discloses “an xDSL modem which tries to reduce the amount of local transmitter energy that couples into a local receiver during full duplex mode” (see paragraph [0016]).

Summary of the Subject Matter Disclosed in the Specification

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

The specification discloses a method and device for matching the impedance of a high bit rate transmission channel of a copper-wired terminal installation connected to an access network delivering narrowband (analog or ISDN) services and broadband (x-DSL) services, where the installation comprises an x-DSL high bit rate modem and a jack (see pg. 4, lines 33 to pg. 5, line 1 of the specification as originally filed). In accordance with the claimed invention, the installation automatically matches the impedance of the high bit rate transmission channel based on whether a modem is plugged into a jack of the installation. The installation prevents line mismatches that are caused by the presence of open branches and/or capacitive loads, and avoids problems associated with degraded performance of the high bit rate connection if a high bit rate x-DSL modem is connected to a jack having a previously inserted terminating impedance (see pg. 4, lines 2-11 as originally filed).

The device includes an adjustment module that is installed in the jack, where the adjustment module comprises an RC circuit and is configured to insert the terminating impedance into the jack when the jack is unconnected to the high bit rate x-DSL modem.

The device also includes a coupling module that is connected to the high bit rate x-DSL modem, where the coupling module comprises a resistor that is configured for connection in

parallel with a capacitor of the adjustment module to reverse-bias a varicap diode of the adjustment module. The coupling module is configured for combination with the adjustment module when the high bit rate x-DSL modem is connected to the jack to transform the impedance inserted into the jack.

The adjustment module enables insertion of an infinite terminating impedance into the jack. The adjustment module therefore serves as a plug and protects the high bit rate connection from reflections on the line, i.e., mismatches caused by the presence of open branches and/or capacitive loads that interfere with high bit rate transmission in the frequency band from 3-12 MHz. Moreover, when the high bit rate x-DSL modem is plugged into the jack, the adjustment module and the coupling module are combined to automatically modify the impedance of the jack in the 3-12 MHz band so that the resulting impedance is an infinite impedance. The resulting impedance then has a value from 1 KOhm to 10 MOhm, for example, and is transparent to the high bit rate transmission (see pg. 5, line 24 to pg. 6, line 1).

Amendments Addressing Section 112 Issues

The Examiner has stated “[i]t is not clear exactly what the RCE circuit would contain”. In response to this rejection, applicants have amended independent claim 1 to recite “an adjustment module installed in said jack, said adjustment module comprising an RC circuit”. The specification discloses an embodiment in which the RC circuit comprises, in series, a second resistor (R), a capacitor (C1, C2), and a varicap diode (D1, D2) (see, e.g., FIG. 3 or dependent claim 2). The claimed RC circuit is therefore fully supported by the specification and its components are, thus, clear. Withdrawal of the 35 U.S.C. §112, second paragraph rejection is thus deemed to be in order.

Patentability of the Independent Claims Under 35 U.S.C. §102(e)

Independent claim 1 has been amended to incorporate the subject matter of dependent claims 6 and 9 (now canceled). Thus, amended independent claim 1 now recites, *inter alia*, “a coupling module connected to the high bit rate modem, said coupling module comprising a first resistor configured for connection in parallel with a capacitor of the adjustment module to reverse-bias a varicap diode of the adjustment module, said coupling module being configured for combination with said adjustment module when said high bit rate x-DSL modem is connected to said jack to transform the impedance inserted into said jack”. Independent claims 13, 14 and 15 have been correspondingly amended. No new matter has been added.

Bareis (col. 6, lines 2-7; FIGS 1 and 2) explains that “the adaptive impedance matching device includes a transmit and receive section located at each end of a transmission line. One end of the transmission line is terminated at the distribution office, such as a telecommunications central office, and the other end of the transmission line is located at or in the customer premises. For simplicity and to make clear the operation of the present invention, pertinent components have been shown.” *Bareis* fails to teach or suggest “a coupling module connected to the high bit rate modem”, as recited in now amended claims 1, 13, 14 and 15.

The claimed coupling module of independent claim 1 comprises a first resistor that is configured for connection in parallel with a capacitor of the adjustment module to reverse-bias a varicap diode of the adjustment module. The coupling module of independent claim 1 is configured for combination with the adjustment module when the high bit rate x-DSL modem is connected to the jack to transform the impedance inserted into the jack. *Bareis* fails to teach or suggest these claimed limitations and, therefore, amended claim 1 is patentable over *Bareis*.

Independent claims 13, 14 and 15 correspondingly recite the claimed features of independent claim 1 and are also patentable over *Bareis*.

In view of the foregoing, amended independent claims 1, 13, 14 and 15 are not anticipated by *Bareis*. Reconsideration and withdrawal of the rejection of claims 1, 13, 14 and 15 under 35 U.S.C. §102 are thus deemed to be in order, and early notice to that effect is solicited.

Moreover, by virtue of the above-discussed fundamental differences between the recitations of claims 1, 13, 14 and 15 and the teachings of *Bareis*, and the lack of any clear motivation for modifying *Bareis* to achieve applicant's claimed invention, independent claims 1, 13, 14 and 15 are deemed to be patentably distinct over *Bareis* under 35 U.S.C. §103(a).

Patentability of Independent Claims Under 35 U.S.C. §103(a)

The Examiner (at pg. 3 of the Office Action) acknowledges that *Bareis* fails to disclose "the specifics of the device," as recited in dependent claims 2-9, and cites *Stiscia* for the features.

Applicants, however, contend that no combination of *Bareis* and *Stiscia* achieves the subject matter of independent claim 1, from which claims 2-5, 7 and 9 depend. There is simply nothing in *Stiscia* to cure the above-discussed deficiency in *Bareis*, e.g., the lack of teachings relating to applicants' claimed coupling module connected to a high bit rate modem, as recited in now amended independent claim 1.

Stiscia (FIG. 5) depicts "the circuit diagram model of a modem having an adaptive hybrid circuit 150". *Stiscia* (paragraph [0030], lines 3-5) explains that "[t]he adaptive hybrid circuit preferably comprises a pair of transformers T1 and T2 and an adaptive impedance 152 of ZX for hybrid termination". *Stiscia* (paragraph [0030], lines 6-11) additionally explains that

“transformer T1 connects to the receiver section 154 (having impedance ZR) while transformer T2 connects to the transmitter section 156 (having impedance ZT). The two transformers T1,T2 are connected to provide conjugacy between alternate sets of ports, and provide impedance matching at each port”.

Stiscia, however, fails to teach or suggest anything whatsoever with respect to the claimed coupling module, as in now-amended independent claim 1. Each of the cited references thus fails to teach or suggest the express recitations of applicants’ independent claim 1. Since *Bareis* and *Stiscia*, individually or in combination, fail to teach or suggest the features recited in independent claim 1, dependent claims 2-5, 7 and 9 are deemed to be patentable based at least on their dependency from claim 1.

In view of the foregoing, independent claims 1, 13, 14 and 15 are deemed to be patentable over the combination of *Bareis* and *Stiscia*. Reconsideration and withdrawal of the rejections under 35 U.S.C. §103(a) are requested, and early notice to that effect is earnestly solicited.

Dependent Claims

In view of the patentability of independent claims 1, 13, 14 and 15 for the reasons presented above, each of dependent claims 2-5, 7, 8 and 10-12 is respectfully deemed to be patentable therewith over the prior art. Moreover, each of these claims includes features which serve to still further distinguish the claimed invention over the applied art.

Conclusion

Based on all of the above, applicants submit that the present application is now in full and proper condition for allowance. Prompt and favorable action to this effect, and early passage of the application to issue, are solicited.

Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate an early resolution of any outstanding issues.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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